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CONCEPTUALISING THE EXPERTISE OF THE MATHEMATICS TEACHER EDUCATOR

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BACKGROUND

This working group builds on the working group on the same topic at the PME 43 conference (Helliwell, & Chorney, 2019) whereby much of what was suggested for further investigation were questions that extended beyond mathematics teacher educator (MTE) knowledge and moved towards contexts that challenge, extend, constrain, such as culture, complexity, and curriculum. Participants in the 2019 working group expressed an interest in a follow-up working group to continue to develop the ideas and research problems initiated at PME 43.

In terms of MTE expertise, some scholars have extended existing models of mathematics teacher knowledge (such as Shulman's (1986) "pedagogical content knowledge" (PCK)) as a way of describing the knowledge of the MTE (e.g., Chick & Beswick (2018) extend PCK to "MTEPCK" that is a "kind of meta-PCK which could be described as *PCK for teaching the PCK for teaching mathematics*" (p. 476, emphasis original)). In Mason's (2008) chapter *PCK and beyond*, he challenges the common framing of PCK as a kind of psychology and instead proposes thinking about PCK as both social and distributed. Mason suggests that teachers "draw upon knowledges that are distributed in the historical-cultural-social and institutional practices, in texts, works-cards, apparatus, and other materials available…" (p. 309-310). MTE expertise could thus be framed by turning our gaze outward, by drawing on Hutchins' (1995) model of "distributed cognition" as a balance between knowledge and external agencies.

Many of the questions that were posed by the working group participants last year share this outward looking, such as: How do MTEs balance complexity with a focussed treatment of an issue?; how do MTEs make use of examples/problems when working with mathematics teachers?; how do MTEs decentre from their own experiences of teaching mathematics and/or as a student of mathematics?; what is the relationship between in the moment decisions of MTEs and teachers?; and how do MTEs prepare teachers to adapt to curriculum changes (when MTEs themselves need to adapt)? In terms of this follow-up working group, we intend the subgroups formed to continue their conversations and develop ideas further and we also welcome new participants.

AIMS OF WORKING GROUP

- To explore the theorisation of MTE expertise that goes beyond knowledge by considering personal stories, experiences and a variety of frameworks.
- To formulate approaches and research questions around MTE expertise.

- To explore and develop potential methodologies that support these approaches and research questions.

OUTLINE OF SESSIONS

Session 1

- Introductions and initial discussion around the notion of distributed cognition as a possible overarching framework for MTE expertise. The presenters will share some personal experience of expertise that emerged from distributed activity and present some existing explorations of distributed expertise from MTE literature.
- Sharing of examples that connect to some of the questions that emerged from last year, moving to suggestions for possible new approaches to and conceptualisations for describing MTE expertise that offer alternatives to expertise as knowledge.
- Group discussion with a focus on connecting last years' issues and questions with the development of frameworks that support the interaction between the practice of MTEs and conceptualisations of MTE expertise.

Session 2

- Building off session 1, groups will be organised by interest, according to last years' themes and/or emergent themes from session 1. Groups will develop their own questions, but the leaders will provide prompts to support engaging with questions from a distributed approach.
- Each group will share responses and then discuss on next steps for future collaborations, including consideration of a joint output for participants such as a special issue for the *Journal of Mathematics Teacher Education*.

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